

Course Specification

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Produced By:	Laura Clode
Status:	Validated

Core Information

Awarding Body / Institution:	University of Wolverhampton		
School / Institute:	School of Mathematics and Computer Science		
Course Code(s):	CS016K23UV	Sandwich	4 Years
UCAS Code:	I261		
Course Title:	BSc (Hons) Data Science with Sandwich Placement		
Hierarchy of Awards:	Bachelor of Science with Honours Data Science, having satisfactorily completed a sandwich placement Bachelor of Science with Honours Data Science Bachelor of Science Data Science, having satisfactorily completed a sandwich placement Bachelor of Science Artificial Intelligence and Robotics Diploma of Higher Education Data Science Certificate of Higher Education Applied Computing University Statement of Credit University Statement of Credit		
Language of Study:	English		
Date of DAG approval:	26/Sep/2016		
Last Review:	2015/6		
Course Specification valid from:	2015/6		
Course Specification valid to:	2021/2		

Academic Staff

Course Leader:	Dr Paul Wilson
Head of Department:	Dr Kevan Buckley

Course Information

Location of Delivery:	University of Wolverhampton
Category of Partnership:	Not delivered in partnership
Teaching Institution:	University of Wolverhampton
Open / Closed Course:	This course is open to all suitably qualified candidates.

Entry Requirements:

Entry requirements are subject to regular review. The entry requirements applicable to a particular academic year will be published on the University website (and externally as appropriate e.g. UCAS)

- 280 UCAS points, and GCSE Grade C or above in English and Maths or Key Skills Communication at Level 2 and Application of Number at Level 3
- Applications from candidates over 21 years of age with relevant experience and other qualifications will be considered. This may include an assessment of your mathematical ability by the course tutor after you have applied for this course.
- International students must also have an IELTS score of 6.0, or a TOEFL score of 550 (or 213 for the computer-based test) or equivalent in English.

Distinctive Features of the Course:

IBM estimates that 90% of all data in the world today has been created in the past two years. As data becomes the new raw material of business the role of data scientist is becoming increasingly important. Whether it is predicting consumer behaviour, extracting information from medical images, uncovering hidden stock market indicators or studying human genetic structure, data science is inspiring change around the world.

BSc (Hons) Data Science course will develop in you strong mathematical, statistical, computational and programming skills. It focuses on the creation and application of powerful new methods for collecting, organising, analysing and making discoveries from large-scale data. In addition to this core knowledge you will develop expertise in specialist areas including machine learning, data mining and artificial intelligence. You will also be able to concentrate on project based learning and problem solving in one or more of the following areas: finance, mathematics and computer science. The course follows three years of study, with an optional year in industry after your second year.

Educational Aims of the Course:

This course aims to develop your ability to analyse big data and use this analysis to make data informed decisions in a systematic way.

The course will teach you advanced problem-solving skills, the computing, mathematics and statistical skills you need to undertake appropriate analysis. These are skills which are highly sought after by many graduate employers. Data analysts are warmly welcomed in industry, business and commerce for their analytical ability and logical approach to unravelling complex issues.

Intakes:

September

Major Source of Funding:

Tuition Fees:

Tuition fees are reviewed on an annual basis. The fees applicable to a particular academic year will be published on the University website.

Year	Status	Mode	Amount
2020/1	H	Full Time / Sandwich	£9250.00
2020/1	Overseas	Full Time / Sandwich	£12250.00

PSRB:

None

Course Structure:

September (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Year 1

Module	Title	Credits	Period	Type
4CS001	Introductory Programming And Problem Solving	20	SEM1	Core
4CS015	Fundamentals of Computing	20	SEM1	Core
4CI018	Academic Skills and Team-based Learning	20	SEM1	Core
4MM013	Computational Mathematics	20	SEM2	Core
4MM025	Probability & Statistics	20	SEM2	Core
4CS016	Embedded Systems Programming	20	SEM2	Core

September (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Year 2

Module	Title	Credits	Period	Type
5CI021	Data Mining	20	SEM1	Core
5CI022	Databases	20	SEM1	Core
5CI023	Advanced Databases	20	SEM2	Core
5CS024	Collaborative Development	20	SEM2	Core
5MM014	Introduction to Operational Research	20	SEM2	Core
5MM025	Statistical Modelling & Survey Design	20	SEM1	Core

September (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Year 3

Module	Title	Credits	Period	Type
5MM006	Industrial Placement	40	CRYRA	Core

September (Sandwich)

Part time students study alongside full time students. However, they do not study more than 80 credits in each academic calendar year.

Year 4

Module	Title	Credits	Period	Type
6MM026	Financial Mathematics and Data Analysis	20	SEM1	Core
6CS007	Project and Professionalism	40	YEAR	Core
6MM029	Multivariate Statistics with Cybermetrics	20	SEM1	Core
6CS012	Artificial Intelligence and Machine Learning	20	SEM2	Core
6CS030	Big Data	20	SEM2	Core

Please note: Optional modules might not run every year, the course team will decide on an annual basis which options will be running, based on student demand and academic factors, to create the best learning experience.

Learning, Teaching and Assessment

Academic Regulations Exemption:

None

Reference Points:

Quality Code - [Part A: Setting and Maintaining Academic Standards](#). Including :

[Qualifications Frameworks](#)

[Characteristics Statements](#)

[Credit Frameworks](#)

[Subject Benchmark Statements](#) - *Computing*

Quality Code - [Part B: Assuring and Enhancing Academic Quality](#)

[University Policies and Regulations](#)

Equality Act (2010).

Learning Outcomes:

CertHE Course Learning Outcome 1 (CHECLO1)

"Demonstrate knowledge of the underlying concepts and principles associated with your area(s) of study, and an ability to evaluate and interpret these within the context of that area of study."

CertHE Course Learning Outcome 2 (CHECLO2)

"Demonstrate an ability to present, evaluate and interpret qualitative and quantitative data, in order to develop lines of argument and make sound judgements in accordance with basic theories and concepts of your subject(s) of study."

CertHE Course Learning Outcome 3 (CHECLO3)

Evaluate the appropriateness of different approaches to solving problems related to your area(s) of study and/or work.

CertHE Course Learning Outcome 4 (CHECLO4)

"Communicate the results of your study/work accurately and reliably, and with structured and coherent arguments."

CertHE Course Learning Outcome 5 (CHECLO5)

Demonstrate the qualities and transferable skills necessary for employment requiring the exercise of some personal responsibility.

DipHE Course Learning Outcome 1 (DHECLO1)

"Demonstrate knowledge and critical understanding of the well-established principles of your area(s) of study, and of the way in which those principles have developed with an understanding of the limits of your knowledge, and how this influences analyses and interpretations based on that knowledge."

DipHE Course Learning Outcome 2 (DHECLO2)

"Demonstrate the ability to apply underlying concepts and principles outside the context in which they were first studied, including, where appropriate, the application of those principles in an employment context."

DipHE Course Learning Outcome 3 (DHECLO3)

"Demonstrate knowledge of the main methods of enquiry in the subject(s) relevant to the named award, and

ability to evaluate critically the appropriateness of different approaches to solving problems in the field of study."

DipHE Course Learning Outcome 4 (DHECLO4)

"Use a range of established techniques to initiate and undertake critical analysis of information, and to propose solutions to problems arising from that analysis."

DipHE Course Learning Outcome 5 (DHECLO5)

"Effectively communicate information, arguments and analysis in a variety of forms to specialist and non-specialist audiences, and deploy key techniques of the discipline effectively."

DipHE Course Learning Outcome 6 (DHECLO6)

"Demonstrate the qualities and transferable skills necessary for employment, requiring the exercise of personal responsibility and decision-making and undertake further training, developing existing skills and acquire new competences that will enable them to assume significant responsibility within organisations."

Ordinary Degree Course Learning Outcome 1 (ORDCLO1)

"Demonstrate and apply an understanding, knowledge and experience of the principles of Data Science"

Ordinary Degree Course Learning Outcome 2 (ORDCLO2)

"Develop and apply knowledge and experience of a range of various technologies, techniques, tools and methods used to analyse data."

Ordinary Degree Course Learning Outcome 3 (ORDCLO3)

Demonstrate a knowledge of Big Data Analytics for analysing and mining data and developing decision models in a broad range of application areas.

Ordinary Degree Course Learning Outcome 4 (ORDCLO4)

"Develop and demonstrate a range of transferrable skills in problem solving, communication, project management, working individually and in teams, self-management and the ability to gather, evaluate and reflect on information to support the decision making process."

Ordinary Degree Course Learning Outcome 5 (ORDCLO5)

"Demonstrate a knowledge of a range of social, legal, ethical and professional skills and apply this knowledge in advanced studies or professional practice."

Honours Degree Course Learning Outcome 1 (DEGCLO1)

"Demonstrate and apply a full understanding, knowledge and experience of the principles of Data Science."

Honours Degree Course Learning Outcome 2 (DEGCLO2)

"Develop and apply knowledge and experience of a range of various technologies, techniques, tools and methods used to analyse data."

Honours Degree Course Learning Outcome 3 (DEGCLO3)

Demonstrate a thorough knowledge of Big Data Analytics for analysing and mining data and developing decision models in a broad range of application areas.

Honours Degree Course Learning Outcome 4 (DEGCLO4)

"Develop and demonstrate a range of transferrable skills in problem solving, communication, project management, working individually and in teams, self-management and the ability to gather, evaluate and reflect on information to support the decision making process."

Honours Degree Course Learning Outcome 5 (DEGCLO5)

"Demonstrate a comprehensive knowledge of a range of social, legal, ethical and professional skills and apply this knowledge in advanced studies or professional practice."

Overview of Assessment:

Module	Title	Course Learning Outcomes
4CI018	Academic Skills and Team-based Learning	CHECLO1, CHECLO2, CHECLO3, CHECLO4, CHECLO5
4CS001	Introductory Programming And Problem Solving	CHECLO1, CHECLO2, CHECLO3, CHECLO4
4CS015	Fundamentals of Computing	CHECLO1, CHECLO2, CHECLO3, CHECLO4
4CS016	Embedded Systems Programming	CHECLO1, CHECLO2, CHECLO3, CHECLO4
4MM013	Computational Mathematics	CHECLO1, CHECLO2, CHECLO3, CHECLO4
4MM025	Probability & Statistics	CHECLO1, CHECLO2, CHECLO3, CHECLO4
5CI021	Data Mining	DHECLO1, DHECLO2, DHECLO3, DHECLO4, DHECLO5
5CI022	Databases	DHECLO1, DHECLO2, DHECLO3, DHECLO4, DHECLO5
5CI023	Advanced Databases	DHECLO1, DHECLO2, DHECLO3, DHECLO4, DHECLO5
5CS024	Collaborative Development	DHECLO1, DHECLO2, DHECLO3, DHECLO4, DHECLO5, DHECLO6
5MM014	Introduction to Operational Research	DHECLO1, DHECLO2, DHECLO3, DHECLO4, DHECLO5
5MM025	Statistical Modelling & Survey Design	DHECLO1, DHECLO2, DHECLO3, DHECLO4, DHECLO5
6CS007	Project and Professionalism	DEGCLO1, DEGCLO2, DEGCLO3, ORDCLO1, ORDCLO2, ORDCLO3
6CS012	Artificial Intelligence and Machine Learning	DEGCLO1, DEGCLO2, DEGCLO3, ORDCLO1, ORDCLO2, ORDCLO3
6CS030	Big Data	DEGCLO3, ORDCLO3
6MM026	Financial Mathematics and Data Analysis	DEGCLO1, DEGCLO2, DEGCLO3, ORDCLO1, ORDCLO2, ORDCLO3
6MM029	Multivariate Statistics with Cybermetrics	DEGCLO1, DEGCLO2, DEGCLO3, DEGCLO4, DEGCLO5, ORDCLO1, ORDCLO2, ORDCLO3, ORDCLO4, ORDCLO5

Teaching, Learning and Assessment:

The learning activities on your course will develop distinctive graduate attributes that will make you stand out and enhance your employability.

These skills will be embedded into the curriculum throughout your course. Examples include:

Digitally Literacy: All Mathematics graduates will surely be users of advanced technologies. However, on your course you will develop your skills to encompass literacy more fully such as learning how to find information and how to take best advantage of digital resources and the Internet to make you effective in the Information Age.

Global Citizenship: On each level of your course you will learn about the social aspects of Mathematics, which will broaden your understanding of the way the world works and how communication and collaboration are evolving.

Knowledgeable and Enterprising: Throughout your course you will build up your professional and employability skills and learn to apply the knowledge you have acquired in an enterprising way. You will constantly nurture your own intellectual curiosity. The tools, methodologies and techniques that you will learn have been carefully selected to prepare you with the skills that employers demand and the opportunities for work based learning and placements will allow you to gain the vital experience that they often expect

Formative assessments provide feedback and are not used in the grading process. Their purpose is to provide both tutors and students with a gauge of progress. Summative assessments are used in the grading process. Most summative assessments (with a notable exception of exams) also have a formative aspect to them in that tutors provide written feedback on the work. Students should use this feedback to improve their performance on future assessments. Feedback on an assessment on one module may help with assessments on other modules. Assessment methods are closely linked to the learning and teaching approaches used. Below are examples of the assessment methods that you may encounter.

Assignments – task based and report based assignments. Coursework frequently requires the writing of reports documenting the development of solutions. It is frequent practice to ask students to reflect on their learning experience as part of the coursework.

Case studies – based on realistic scenarios. Analysis, application and evaluation skills are developed via case studies as appropriate for the topic areas.

Practical exercises – tutorials and workshop sessions. These aid understanding and application of knowledge using a variety of IT tools within practical settings in workshops as well as assessing depth and breadth of understanding and application of subject knowledge. Practical exercises are the primary mechanisms for assessing analysis and evaluation. The tasks undertaken involve well-defined problems with varied level of complexity. Some practical exercise may involve interactive learning tools that are able to provide formative feedback.

Portfolios / e-portfolios – contain samples of work demonstrating what the student has accomplished. This is a good way to assess learning and development which is illustrated by multiple examples of work, opportunities for self-assessment and reflection charting over a period of time. Tasks set relate to outcomes being assessed thus documenting evidence of development towards mastering the identified outcomes and skills. Enhances the assessment process by demonstrating a range of skills and understandings of the subject area by the student. Some portfolios are sometimes called Learning Journals.

Formal presentations - you may be required to present your work to a group of tutors or to the rest of the class. This may be a demonstration of practical work or something you developed or built or may present the results of a study. These are an important way of assessing your communication skills.

Examinations and Time-Constrained Assessments (tests) - may follow a traditional format or on-line alternatives. They are used to ensure breadth of knowledge has been acquired. TCA and examinations, some of which are case study based, emphasise application of knowledge and skills.

Group Project Work - where group work is assessed, mechanisms are used to allow individual contributions to be reflected in the grading as appropriate e.g. peer assessment of individual group members, individual reflection on the process and the product.

Peer-group assessment – using student feedback, particularly in group assessments to identify each student's contribution to the work.

Individual Project Work - All courses require at least one module of individual project work where students work individually on a large task. This type of work is supported by either regular meetings with a named

project supervisor or through seminars.

Work-based assessments – used to assess the student's work-based modules and enable feedback from work placement organisations. These are usually used for students who are industry-based and doing their course part-time or students doing a placement.

Assessments will also focus on skills such as team working, time-management and developing Continuing Professional Development (CPD) awareness, as well as discipline-specific skills related to the analysis, design, development, implementation, testing and evaluation of systems. Typical tasks include: production of technical documentation, reports for differing target audiences, presentations, demonstrations and viva, allowing assessment of the breadth and depth of knowledge, analysis and synthesis, communication, and evaluation within the subject area.

Assessment Methods:

At the University of Wolverhampton, a variety of modes of assessment will be used to support and test your learning and progress and to help you develop capabilities that are valued beyond your University studies and into your working life. Your course may include a variety of assessment activities:

Written examinations (including online examinations, open and closed book examinations and quizzes)
Coursework (for example, essays, reports, portfolios, project proposals and briefs, CVs, poster presentation)
Practical (for example, oral and video presentations, laboratory work, performances, practical skills assessment)

In the final year of your undergraduate degree, and at the end of your postgraduate degree, you are likely to be expected to write an extended piece of work or research, such as a dissertation or a practice-based piece of research.

Student Support:

University provided support:

As well as providing general counselling support the University Counselling Service provides short courses on topics such as "Self Confidence", "Stress Management and Relaxation" and "Life Skills". They also provide study skills and academic support, providing short courses such as provide help in areas such as "Writing and Assignment Skills", "Exam Techniques", "Enhancing Professional Skills", "Personal Development Planning" and "Making Choices for the Future.

University Learning Centres provide general academic skills support to all students. You can make an appointment with a study skills advisor for advice on areas such as academic writing, assignment planning, exam preparation, and time management. In addition, there is a regular timetable of drop-in and bookable workshops covering information and digital literacy skills, including academic referencing. School of Computing and IT students are supported by a designated subject librarian who is available to support research and project work.

Course support:

At the start of each year of your course you will be assigned a Personal Tutor who will guide you through the induction process and provide support and academic counselling throughout the year on an appointment basis. They should be able to offer you advice and guidance to help you liaise with other staff and support facilities in the School and University. You should meet your Personal Tutor at least 3 times a year, which must include meetings that you are invited to at critical points in your course.

The Personal Tutor provides academic counselling and will be accessible throughout the week on a drop-in or appointment basis to discuss timetables, requests for extensions, requests for extenuating circumstances, general concerns about study and student life and general programme planning. The Personal Tutor will act as a first point of contact in relation to leave of absence (including returning after leave), withdrawal, transferring to another course (internal and external) and changes to mode of attendance. Your Course Leader will be available thereafter for meetings by appointment to discuss leave of absence, withdrawal, transferring to

another course (internal and external), changes to mode of attendance, returning after leave of absence and direct entrants.

Subject support:

Tutorials, workshops, seminars and meetings - provide the primary opportunities for students to interact with staff on topics relating to modules. All modules provide at least one of these forms of face-to-face support.

Formative feedback - tutors provide personalised written feedback on most summative assessments. The mechanism for feedback from purely formative tasks varies between assessments, but will always be provided in some form. Online formative tasks often provide feedback straight away. On occasions tutors may provide generalised verbal feedback to the whole class on points relating to an assessment

Assessment and subject-based surgeries provide additional student support for subjects that students often need extra help with. They are often concentrated around the times when assessments take place. Revision sessions are provided for many modules that have exam-like tests and enable you to interact with tutors to review parts of the course. Mock exams and tests may provide opportunities to experience an examination environment before the final summative test and give you feedback on your understanding.

Employability in the Curriculum:

Throughout your course you will build up your professional and employability skills and learn to apply the knowledge you have acquired in an enterprising way. You will constantly nurture your own intellectual curiosity. The tools, methodologies and techniques that you will learn have been carefully selected to prepare you with the skills that employers demand and the opportunities for work based learning and placements will allow you to gain the vital experience that they often expect.



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